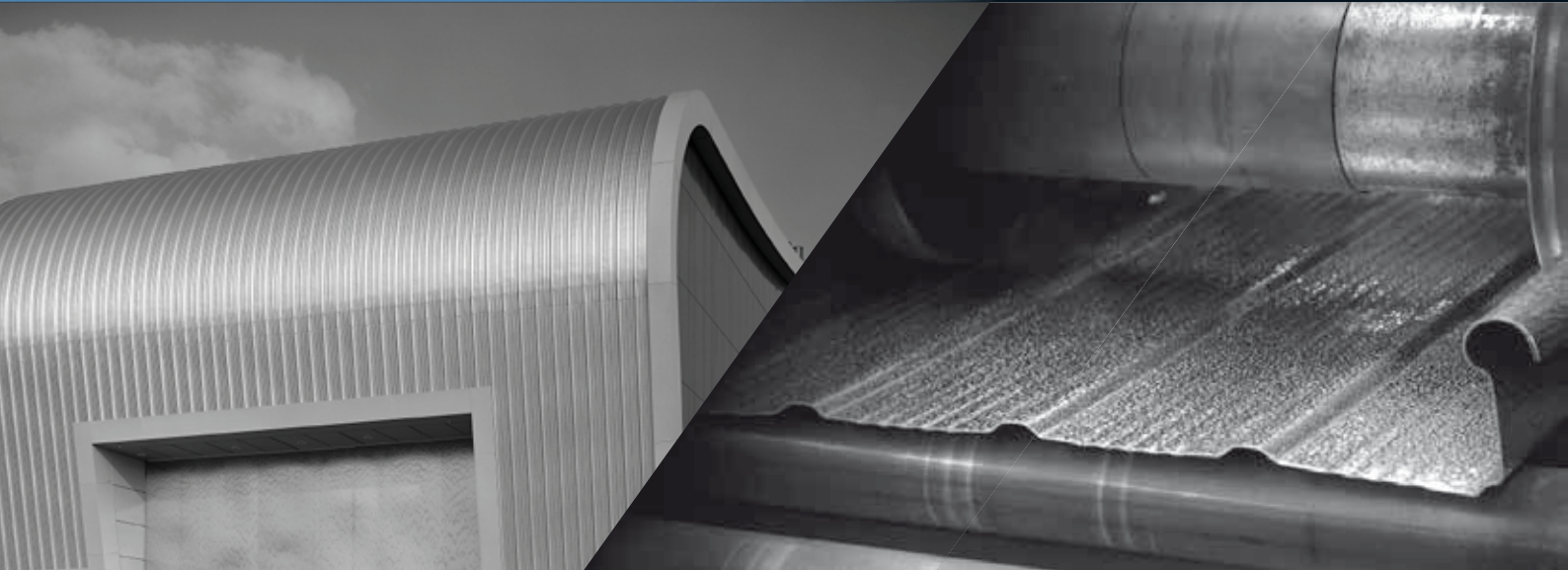


STANDING SEAM



ESTABLISHED IN 1864 AND ONE OF THE OLDEST COMPANIES
IN THE MIDLANDS

The name Ash & Lacy is synonymous with Product Innovation and Engineering Excellence, keeping us at the forefront of building systems engineering and technology.

Thanks to progressive development of our own manufacturing capabilities, construction professionals can procure complete and effective **envelope solutions** from a single-source.

Our extensive, state of the art product range is fully supported by our unrivaled in-house technical and **design expertise**, freely provided at every stage of planning and construction, together with our full product warranty schemes.

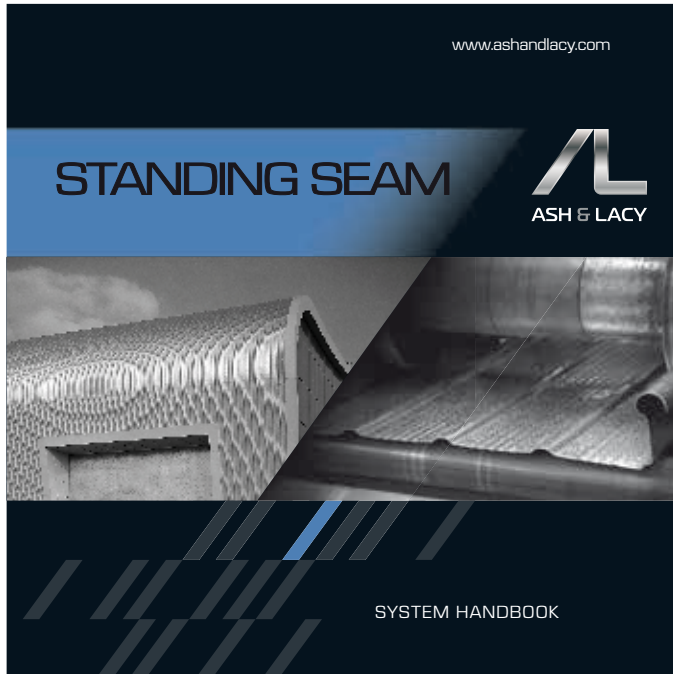
Our Standing Seam **can be manufactured under factory conditions or on-site to form a continuous long length sheet from eaves to ridge or eaves to eaves on a barrel curve.**

From Rainscreen **Façade, Cladding Profile, Screen** and architectural **Fabrications, Spacer System** and **Fixings** range, through to our most recent **Frame** system innovation, all products undergo rigorous testing. They consequently offer exceptional performance and value, supported by best in class service and technical support.

This system handbook provides extensive information on our Standing Seam Product, so whether you are looking at specific acoustic requirements for a cinema project or complex shaped education project, we can help.

We offer systems that are BBA approved, CE Marked and tested by UKAS accredited Acoustic Laboratories, and can be used in both roof and vertical applications.

As part of a series of technical handbooks, this publication gives you advice on how to Design and detail our Standing Seam product.



A superior quality raised standing seam roofing and cladding system that enhances aesthetics and provides a weather tight joint above rainwater flow. The perfect choice for an exceptionally wide range of new build, refurbishment roofing and vertical façade applications. From residential, industrial, commercial and public projects to modular new build.

Available in a range of cover widths and a generous palette of material and colour finishes for optimum architectural design flexibility. Can also be specified with a steel frame solution, designed on a project by project basis, to form a pitched/curved roof above new or existing flat roofs.



The cold rolled Steel Frame range offers a structurally robust and dimensionally stable, warm spaced wall construction that can be used with the majority of external finishes, across most applications.

This component supply, structural stud & track system, is available to suit both infill and oversail systems, both of which provide early weather protection capability to the building, and offer many advantages over traditional construction methods.

State of the art custom built in-house manufacturing facility offers flexibility to best suit site requirements and restrictions, offering components either cut to length or standard stock lengths, both of which can be individually marked allowing easy identification, thus resulting in faster installation.



Ash & Lacy's Bar & Bracket spacer is an integral part of our standing seam system, and was the UK's first spacer support system of its type. We continue to lead through innovation, with the unique Safe-Loc detail incorporated within the bar. Our spacer systems are varied in depth to deal with varying U value requirements, with bracketry spacing being adjusted depending upon the project specific loading requirements.

Deeper constructions can also be specified with our engineered ABV brackets to provide additional strength where a more robust support system is needed.

A wide range of other cladding products can be specified and used above our spacer systems. Assistance can be offered determining bracket support centres and U value build up requirements.



Our bespoke perimeter flashings and fabrications are available in a range of finishes and materials ranging from pre-coated steel to PPC aluminium to perfectly complement our standing seam system or facade panels. We can also provide a full range of ancillary components, such as fabricated stop ends and corner units.

We offer a similarly tailored service with our rainwater management components. Choose from a wide selection of materials from coated galvanised steel to high quality membrane lined options. Our range of ancillaries includes outlets, downpipes, bracketry and fabricated stop ends. A gutter calculation service is available, following order placement.



Our comprehensive selection of roofing and cladding fixings provides quality solutions for almost any application. The range has evolved through extensive research and development, on-site experience and extensive 'real world' testing and engineering.

As a result Ash & Lacy offer unrivalled product quality and performance, with stainless steel, carbon steel and colour headed options, providing the ultimate fixing solution for light/heavy section and timber applications.



Amongst a wide ranging product portfolio we are able to offer trapezoidal cladding. As part of the standing seam construction using our 32/1000/200 profile, it offers a walkable liner profile. Available in a number of finishes from perforated, to accommodate sound absorption, through to specialist coatings for highly aggressive environments, the 32/1000/200 profile is the ideal product.

This product is also available with external coating for use on standard trapezoidal constructions, and is complemented by a range of firewall assessments.



The Ash & Lacy Rainscreen Cladding Façade System out-performs other types of wall construction at an economic whole life cost, with low maintenance requirements and sustainable material options, backed by our renowned technical and fabrication expertise.

Including full through wall construction system this multi-layer system can be fabricated from ACM (Aluminium Composite Material), solid aluminium, Cor-Ten steel, copper, zinc or aluminium honeycomb backed stone to create a ventilated 'cold' façade fixed to an adjustable aluminium carrier system.

Choose from a wide selection of vertical and horizontal joint configurations in a variety of colours and finishes.

High performance and superior aesthetics – our Standing Seam delivers on both counts.

With total compliance to building regulations, and third party accreditation from BBA, our standing seam is the correct specifiers choice. We offer CE marking and a series of system warranties are available, including insurance backed.

Specifiers can also depend on supreme standards of technical support from Ash & Lacy's dedicated team, plus a complete range of complementary building products for design and structural integrity. It's the ideal solution for new build or refurbishment.

We are able to assist with development of complex interface details at an early stage, ensuring specifiers and main contractors have technically competent specifications in advance of tender. This combined with our network of UK wide manufacturing depots for flashings means we can service project needs quickly.



Performance



Deri View School, Abergeveny



Spectrum

With a wide range of colours and finishes available in aluminium, steel, stainless steel and copper, a Standing Seam roof can harmonise or provide dynamic contrast with virtually any design of building or materials. The precision ribbed appearance emphasises contours and creates an unmistakably contemporary effect.



Curves

True freedom comes in the ability to curve and flow in many architectural forms. Curves can be convex or concave (or wave formed by combining both in one profile sheet). Sheets can self-curve with tighter radii being mechanically smooth curved in the factory or on site.

Tapering

Radial roofs are where the system concept comes into its own. Taper roll forming is perfect for creating roofs with an uncompromisingly modern profile. The expertise and computer modelling capabilities of Ash & Lacy's technical department means that complex geometries are achievable.

Weatherproofing

Sheets are normally produced and installed as a single unbroken length and with no penetrative fixings it is virtually impervious to leakage. The seams are closed using a zipping machine which runs up the rib and creates a weatherproof joint with no need for sealant. This means a virtually maintenance free, totally watertight roof.



Azinghur Barracks, Bluestone Developments

Specialist finishes

Available for both Flat pan profile and standard rib configurations, we have a series of specialist finishes which can provide a contemporary appearance to a traditional look product.

Zinc finishes

A real cost effective solution to traditional zinc roofs, a number of paint finishes and coatings are available that offer real value and aesthetic qualities, in comparison to a traditional product.

Zinc coat

The specialist coating is available above the same high quality 3000 series aluminium that we use with our standard finishes, and provide a durable yet lightweight product, that can be constructed without the need for a full supported backing behind the sheet, such as plywood or expensive rigid insulation.

The material oxidises offering a natural self-weathering process. Initially a light grey patination forms which over time changes to a darker zinc grey finish as the natural weathering process takes place.

Additional structural benefit of this material being 60% lighter than in comparison to a full zinc option.

Welding with specialist coating

Our specialist finishes can be used on complicated shapes where welding is required. Details incorporating penetrations, end laps, tapers and welded cranks can be incorporated.



Zinc coat



Zinc coat

STANDING SEAM

Pre-dulled lacquer

Ash & Lacy also offer a pre-dulled mill finish aluminium. This coating is available for both mill finish and stucco embossed alloys, and offers two distinct benefits. 1). Offers a naturally dulled effect from the outset of the installed product 2). Can extend the life of the aluminium by a significant amount of time depending upon application and location.

Alu Natur

Alu Natur is a semi-transparent paint finish available in a wide range of colours from light brushed to Red Copper or Greenzinc brushed, there is a finish to match your requirement. Available in mill finish flat, stucco and brushed.

Please note that for flat pan products the sheets will show signs of undulation once materials start to go through expansion and contraction.



Pre-dulled lacquer.



Elox



AluNatur PUR-PA
Elox Anodised Brushed



AluNatur PUR-PA
Elox Champagne Brushed



AluNatur PUR-PA
Elox Light Umber Brushed



AluNatur PUR-PA
Elox Medium Champagne Brushed



AluNatur PUR-PA
Elox Pale Umber Brushed



AluNatur PUR-PA
Elox Umber TL

AluNatur



AluNatur HDP
Bright TL



AluNatur HDP
Sky Blue TL



AluNatur PUR-PA
Titanium Brushed



AluNatur HDP
Champagne TL



AluNatur PUR-PA
Champagne Brushed



AluNatur HDP
New Gold Brushed



AluNatur HDP
Bright Brushed



AluNatur PUR-PA
Titanium TL



AluNatur PUR-PA
Red Copper TL



AluNatur HDP
Champagne Brushed



AluNatur PUR-PA
New Gold Brushed



AluNatur HDP
Orange Gold Brushed

STANDING SEAM

Zinc



AluNatur PUR-PA
Quartzinc Brushed



AluNatur PUR-PA
Bluezinc Brushed



AluNatur PUR-PA
Greenzinc Brushed



AluNatur PUR-PA
Redzinc Brushed

Zinc Coated



EuraZinc Pro - Newly Painted



EuraZinc Pro - Weathered

Stone/concrete effect



Urban Concrete



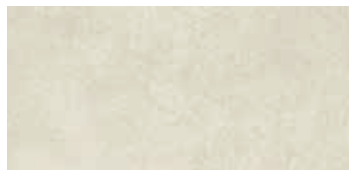
Washed Concrete



Graphite Slate



Industrial Concrete



Moon Concrete

Standing seam roofing systems are renowned for their outstanding aesthetic and performance characteristics and have been used extensively throughout the public and private sectors in the UK for over 30 years.

The Ash and Lacy standing seam roofing system represents excellent value without any compromise on quality, service, choice or the comprehensive range of design and detailing options available. By incorporating other high performance Ash & Lacy building envelope products into the roofing system, compatibility is ensured between the individual components. Manufactured using the latest state-of-the-art design and production equipment and available in a variety of materials and finishes, the standing seam solution has proved to be an unbeatable choice amongst both specifiers and contractors.

Mobile rollforming units provide efficient UK and international coverage and offer the option of manufacture in a factory environment or on site (depending on sheet lengths required). To achieve convex and concave curves to tighter radii than site flexing Ash & Lacy have invested in mobile curving technology, which like the containerised mobile rollforming units, can curve the sheets on site or in the factory.

Materials & finishes

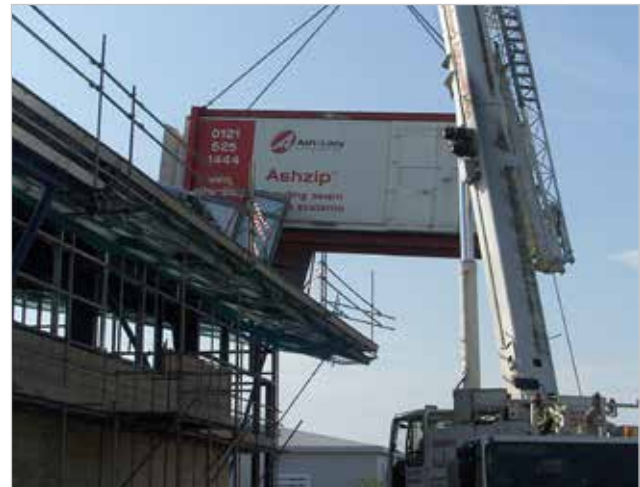
The standing seam external profile is available in a wide range of materials including 3000 series aluminium, G275 pre-painted galvanised steel, copper and zinc. Finishes available include plain stucco embossed, PVF2/PVdF and ARS on aluminium, or Plastisol on steel in the full range of BS and RAL colours. Colour swatches, colour cards and sheet samples are available upon request. Special design considerations are required for zinc roofs and softer materials.

Stucco embossed & plain mill finish aluminium

0.9mm thick plain mill finish & stucco embossed aluminium is normally expected to last the life of the building without maintenance – BS5427: 1976. BBA certificate 06/4301 states 40 year life expectancy.

PVF2/PVdF on aluminium

With excellent durability and colour stability, this finish usually provides a long-term aesthetic life in excess of 25 years on an aluminium substrate. As the aluminium does not rust and most shades have an even colour change that does not peel, it is feasible that some applications may never need attention, other than simple regular maintenance.



On site Rollforming System

ARS (Abrasive Resistant System) on aluminium

An abrasion resistant coating for aluminium with good handling characteristics and advantages for certain applications. 20 years aesthetic life span can be achieved.

200 microns Plastic Coatings on steel

The established high performance coating on pre-painted steel. Tata HPS 200 ULTRA is available with a projected lifespan of up to 40 years.



Stucco embossed aluminium

Durability

The durability of a metal coating is determined by many factors such as colour, location, environment and building use. The information given within this document is intended as general guidance for the British Isles only. For project specific information, please contact Ash & Lacy.

Aesthetics

The building designer should remember that scratches and minor abrasions to the coating can occur during installation. Within reason these marks do not affect the warranty and as such are not considered a problem when using aluminium. Careful thought should be given to the specification if the materials can be seen at close quarters.



Dublin Port Tunnel

Designed for roof pitches as low as 1.5°, our standing seam is secretly fixed by engaging an anchor headed halter within a keyhole standing seam rib. The keyhole is then closed tightly around the halter by running a zipping machine along the rib. When designing a roof the following minimum pitches should be observed.

Application	Minimum Roof Pitch
Continuous sheet from ridge to eaves	1.5°
Sheet with welded lap	1.5°
Roof with welded roof penetrations*	1.5°
Zip-up rooflights ridge to eaves	1.5°
Rooflights lapped onto Ashzip**	1.5°
Curved roofs	N/A

* Minimum upstand of 150mm

** 1.5° for full slope length applications

Note: When taking into account minimum roof pitches, the designer/contractor should ensure that depths of flashings and other component materials are considered to prevent ponding at gutter locations. This can be achieved by the use of a lower height support bracket or by dropping the level of the last support by 5mm at the eaves location (the latter being the preferred option).

For further information please contact our technical department or refer to our standard details.

Typical Construction

The roofing sheets are placed onto halter brackets and then locked into position using a powered zipping machine with each following sheet hiding the seam overlapping the halter.

Fasteners are positioned below the roof covering at the base of the halter and are therefore concealed from view.

Movement of the top sheet due to thermal expansion is catered for by the sliding action over the head of the halter bracket, in conjunction with a fixed point at the highpoint. Any joints or apertures in the roof should have a minimum upstand of 150mm and be designed to prevent any water ingress, and to also allow thermal movement to occur.

Profile Widths

Our standing seam profile is available in 300mm and 400mm coverwidths, and a ranges of rib configurations. Sheets can also be produced in a tapered format to create a radial roof on



plan or as faceted elements within roof plans which curve more gradually.

Non standard profile widths can be produced in special cases, but cannot be pre-curved.

Typical Conception

Ash & Lacy's technical personnel can assist with every aspect of the process, from initial conception to final completion. We are able to offer upfront assistance in development of the project specification and detailing to ensure specifiers and main contractors have technically competent specifications at tender stage.

Compliance

Achieving compliance with Building Regulations and Standards involves a combination of the right products and correct design. We can provide both to ensure correct standards in areas such as insulation, acoustics, load carrying, wind uplift, condensation and airtightness with U/values of 0.10w/m²k being easily achieved.

Construction

On-site surveys and experienced personnel for the on-site rollforming service ensures that the construction process runs as smoothly as possible. A national network of locally based specification personnel means rapid advice and assistance on-site is only a phone call away.

- Aluminium grade used is 3000 series and is available in various gauges from 0.9mm upwards
- BBA approved incorporating thermal expansion testing requirements
- Thermally efficient nylon halter option
- Halter spacing constant, irrespective of curvature of the sheet
- No fixing penetrations through the weathering face of the sheet, all fixings are below the sheet
- Fully supported by a range of complimentary products
- Technical service to assist with specification and detailing
- Full compliance with Building Regulations/Technical Standards
- Specialist site welding details available
- Insurance backed warranty available
- Produced in the factory or on-site to accommodate all requirements
- Can be naturally curved or pre-curved depending on required radius
- Available in natural finish, stucco embossed, painted aluminium, plastisol, PVDF, polyester coated steel as well as zinc, copper and stainless steel
- Compatible fall arrest systems available
- Green roof and bio-diverse roofs available, offering the lightest system available, thus minimising cost of support steelwork
- Tapered and tapered curved sheets available
- Outstanding resistance to wind uplift
- Range of acoustic roof options available

Aesthetics

A building is often the external face of the organisation it accommodates. Alongside performance, aesthetic expectations are nowadays of paramount importance. With its attractive narrow ribs at wide centres, our Standing Seam brings the traditional benefits of metal roofing installation speed, durability and security, without an 'industrial' appearance.

A wide palette of colours and finishes are available, and the sheets can be tapered or curved to suit the design requirements.

The evolution of architecturally pleasing roof and wall cladding systems emphasises the importance of equally sophisticated perimeter detailing. From initial concept to project completion, our quality of sheet metal fabrication skills, technical competence, technology and trusted experience ensure that the standing seam roofing solution is best placed to achieve the highest aesthetic standards.

Curved roofs

Our standing seam system can be convex or concave curved or 'wave formed' (the latter are configurations incorporating both convex and concave curves in one profile sheet). So-called 'hockey stick' sheets, with one end partially curved and a straight tail to the profile sheet, can also be formed. Sheets will self-curve to approximately 40m convex radius depending on material, thickness and profile width. For radii beneath this figure, they can be mechanically smooth curved down to very tight radii, either at the factory or on site.



Sandwell College, Interserve



Sandwell College

Standing seam may be manufactured in tapered sheet formats enabling a wide range of curves on plan and radials to be achieved in conjunction with standard parallel sheets. Tapers can be produced for both left to right and right to left lay direction and individual sheets may be produced up to = 20m long, maximum width = 500mm, minimum width = 250mm. The width of tapered sheets should be calculated by the fixing contractor against full structural steelwork drawings. Assistance can be provided by Ash & Lacy Technical Department at the design stage, as discrepancies in the steelwork can occur. It is recommended that the actual steelwork dimensions are checked against drawings before the setting out of the halters and subsequent installation begins.

Minimum/Maximum Sheet Widths

When calculating the cover width of tapered sheets, widths of between 400 or 500mm (wide end) and 250mm (narrow end) will generally be used to provide optimum usage of flat sheets and to keep costs to the roofing contractor to a minimum. Cover widths greater than 400mm will need to be fully supported by rigid non-combustible insulation slabs. Once the cover width becomes less than 400mm, there is no requirement for the rigid insulation to support the pan of the sheet. Sheets wider than 500mm can be manufactured, but specific fixing methods will have to be adopted. Please refer to the Ash & Lacy Technical Department for further information. If the plan radius of the building does not suit the minimum and maximum sheet sizes there are two options:

1. Special width sheets can be produced subject to production checks and structural connection details.

2. Sheets can be fitted in a layered format incorporating the minimum and maximum sheet widths. In some cases the seams will not always line up which is governed by the internal diameter/radius and how many times the sheet must be split. Joints are then site welded. Refer to Ash & Lacy's technical Department for more information

When using tapered sheets halters are set out along radial supports following the plane of the roof. Liner sheets are not supplied tapered and will be cut to suit on site, and the edges covered with a flashing trim along the line of the rafter. The spacer support system should be ordered with short bar lengths (but no shorter than 2m). If this does not fit within tight curves then top hat sections should be incorporated to provide a more rigid support system.



Sisters of Mercy, McNamara Construction

Welded Joint for Tapers

Where the building is tightly curved on plan it may not be possible to have a continuous sheet from eaves to ridge. In such cases the sheets must be split and welded, to fit the required building curvature.

A 300mm strip of high density Rockwool Hardrock insulation (or similar approved non-combustible) should be positioned underneath the welded joint. This provides additional support and rigidity whilst the tapered sheets are being site welded and subjected to high levels of foot traffic. In most applications, tapered roofs will incorporate a spacer support system or top hats to provide flexibility in setting out. The details below are for relatively shallow radii on plane to ensure continuity of the Spacer System.

For suitability of use for specific projects please refer to the Ash & Lacy Technical Department for design assistance.

Straights and Tapers

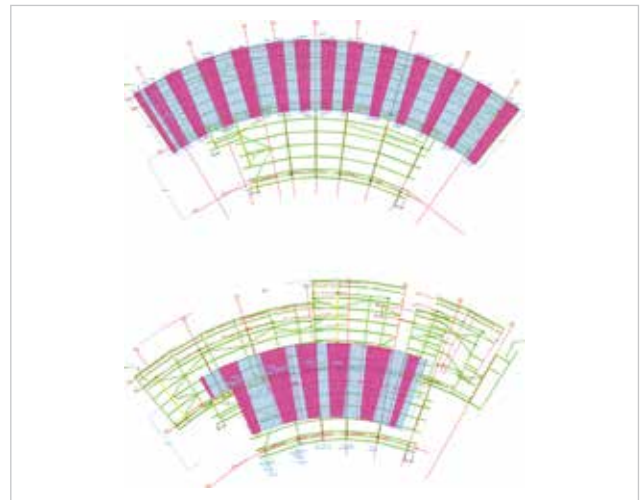
On buildings that have relatively shallow radii on plan the appearance of a curve can be achieved by using a combination of straight and tapered sheets together with closer rafter locations - see opposite.

On this particular layout there are non-symmetrical bays and the straight sheets are laid out from the approximate centre of each bay perpendicular to the main eaves and ridge beams.

The roof areas at the ends of the bays are taken up with the tapered sheets and are calculated on the basis of minimum and maximum sheet size parameters. If one sheet falls below



Dollar Academy



Cranfield University - Straights and Tapers

STANDING SEAM

the minimum or is larger than the maximum, then the straight sheets will have to be adjusted to suit or be replaced by more tapered sheets.

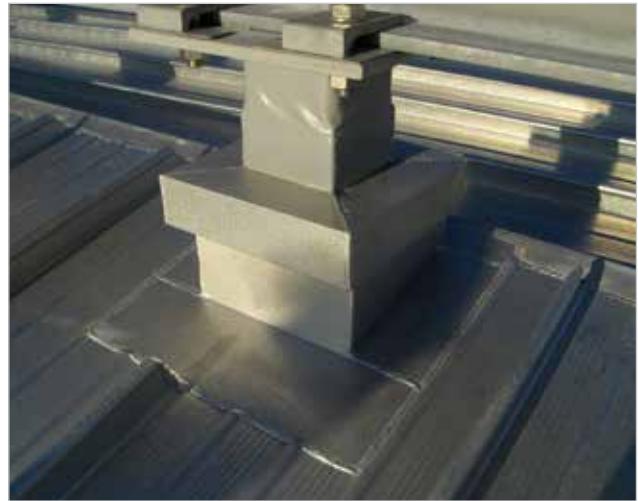
Welding can be used for a variety of applications, where there are roof penetrations, awkward shapes & sheet joins. Whether the finish is stucco embossed mill finish, Painted ARS or PVdF, or one of our more specialist finishes such as Zinc coat, a weather tight welded joint can be achieved and the paint touched up to a correct colour and shade match. A reputable welding contractor will provide a full warranty to cover their work.

For applications where a vertical standing seam sheet cranks and returns to an eaves gutter, we recommend undertaking the welding under factory conditions to achieve the best final appearance. Controlled conditions for production of such sheets is critical to achieving a high final aesthetic.

Maintenance access & Walkways

Supplementary walkways can be included within the system. This can be catered for in two ways:

- 1). A proprietary walkway can be connected to the standing seam via a non-penetrative clip. This can be run across or up the roof slope, with the seam clip being positioned to suit. The walkway can be used in conjunction with either a hand rail or mansafe system.
- 2). Rigid insulation can be included within the cavity zone providing a fully supported sheet pan. The subsequent walkway area can then be shown in the O&M Manual and its location can be highlighted by the inclusion of powder coated seam clamps along the sheets.



Welded Soaker upstand detail



Walkway connection via Seam Clamp

Welding and accessories

A wide range of details and interfaces are available for incorporation within the profile, including soakers, pipe penetrations and sunpipes. From a warranty point of view we would recommend that these details are fully aluminium welded to ensure continuity of materials. We do not support GRP welding for sealing and weathering of such details.

Where an aluminium weld is used to weather a penetration, consideration should be given to the shape of the roof and how expansion and contraction can be catered for. For a rooflight detail the welded upstand should be kept separate from the internal soaker and where insulated sufficient gap must be left between the insulation board and the welded soaker. Please refer to Ash & Lacy Technical department for advice on fixed point locations.

A non-combustible, rigid insulation board should be used to support all welded details to prevent deformation during the welding process, as far as is possible.

We are also able to offer welded cranked sheets which can be used in both roof and wall applications with a range of configurations to suit the shape of the building. For painted material, the coating is etched back and then reapplied after welding, with reputable welding contractors offering extensive warranties for the workmanship.

Seam clamps can be used to connect a variety of accessories to the standing seam profile. The clips are non-penetrative so do not impede expansion and contraction. For example PV & solar applications can be incorporated whereby the seam clamp offers a flat surface to fix the PV carrier system to. PV connection and electrical wires can be fed into the building through the roof via welded feed pipes to match the roof covering.



Factory pre-formed cranked sheets

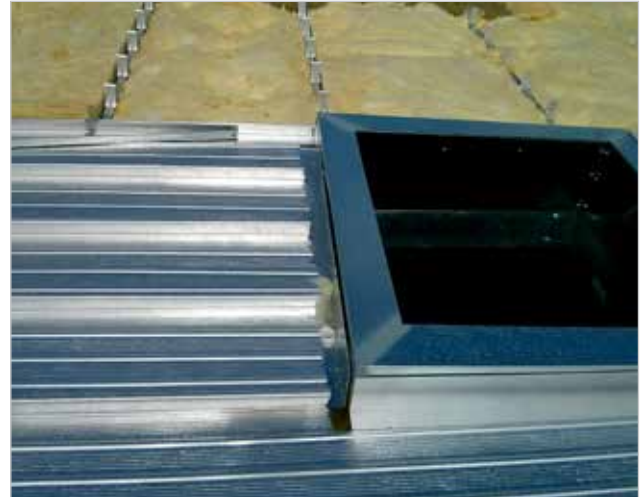


Accessories connected via seam clamps

STANDING SEAM

We can also offer gutter support arms to cantilever out past the end of the sheet and provide a flat baring surface to perimeter fabrications or trim line gutters. These are generally positioned on alternate seams and length will be dictated by size of gutter.

For rooflights that are integrated into the profile via a soaker unit, the seams are cut back and flood welded closed to allow the inclusion of a flat plate, which forms a drainage path around the upstand. Consideration should be given to the length of the weld and pitch of rooflight, to ensure rain water does not build up on the upslope side of the roof light. If such a detail is to be used on a steep pitched application, water baffles can be incorporated further upslope to divert water within the pan of the sheets, around the rooflight. Please consult our technical department for further details.



Soaker with expansion gap



Sainsbury, Llangollen - JP Pickstock



Soaker with rigid insulation in place

Regulatory changes

Regulatory changes and the designers' requirement to produce a more environmentally friendly building, mean that thermally efficient and simple to install systems are a requirement within the construction industry. U/Values to 0.10 W/m²K can easily be achieved.

Insulation depths

The engineered halter with its small cross sectional area and careful selection of materials, ensures minimal thermal bridging between the outer and inner sheets whilst providing high levels of structural performance.

The thermal performance has been calculated by taking into account the effects of two and three dimensional heat flow by using computer software to model the building structure.



Triumph Activation, Barnwood Construction

The following tables detail the heights/thickness of the various components required to achieve the desired U-value. However, bespoke calculations can be provided where required. Contact the Ash & Lacy Technical Department for more information.

Insulation

The building should be designed and constructed so that there are no gaps in the insulation layer. This applies to all areas, but experience has shown that the biggest problems are always at the junctions and edges of the various building elements (eaves, verges, ridges, hips, valleys, abutments etc.).

In all cases insulation should be laid with staggered laps. Insulation layers in the various building elements must always abut or overlap one another, rather than stopping short of each other.

Robust details are available for all common typical details. These ensure that there are no significant gaps or thermal bridges at the interface of the various elements. Our technical team is available to provide bespoke assistance.

We are able to provide U value calculation for all of our system build ups along with a full NBS specification writing service from an early stage. Full working drawings are usually produced by the installing contractor to show interface details between roof and wall applications. We can provide detailing assistance at specification stage to ensure tender documents are as accurate as possible, prior to full working construction issue drawings being issued.

Table 1 - Bar & Bracket & Extruded Halter

U value	Uncompressed quilt	Compressed quilt	Aluminium Halter	Bar & Bracket depth	Overall depth
0.22	230	215	120	160	280
0.21	240	225	120	170	290
0.20	250	235	120	180	300
0.19	260	245	120	190	310
0.18	270	255	120	200	320
0.17	290	275	120	220	340
0.16	310	290	205	150	355
0.15	330	310	205	170	375

Table 2 - Bar & Bracket & Nylon Halter

U value	Uncompressed quilt	Compressed quilt	Nylon Halter	Bar & Bracket depth	Overall depth
0.22	220	200	125	140	265
0.21	230	210	125	150	275
0.20	240	220	125	160	285
0.19	250	230	125	170	295
0.18	260	240	125	180	305
0.17	270	250	125	190	315
0.16	290	270	125	210	335
0.15	300	280	125	220	345
0.14	310	290	125	230	355

Table 3 - Bar & Bracket ABV & Nylon Halter

U value	Uncompressed quilt	Compressed quilt	Nylon Halter	Bar & Bracket depth	Overall depth
0.13	340	320	125	260	385
0.12	360	340	125	300	425

Note: All of the above are based on typical 1.5m purlin centres.



We have a wide selection of acoustic solutions for rain noise reduction, sound reduction and sound absorption to reduce internal reverberation.

Sound reduction

A number of systems have been tested, for example a simple aluminium outer sheet, quilt & spacer with steel liner will achieve 40dB SRI.

Independent testing provides sound reduction results ranging from 40dB up to 56dB. The latter being used on a number of Cinema projects throughout the UK, where low end frequencies represent a major problem for reduction of sound from one site of the construction to another.

Depending upon specific requirements, we have several systems tested which can provide a high dB SRI rating, or can deal with specific frequency requirements, through incorporation of CP board or high density insulants.



Corby cinema

Sound Absorption

We are able to offer our liner profile as a perforated option, incorporating trough or full perforations across the whole sheet

We are also able to offer long span decking profiles with a web perforated option, where absorption of internally reflected sound is required.

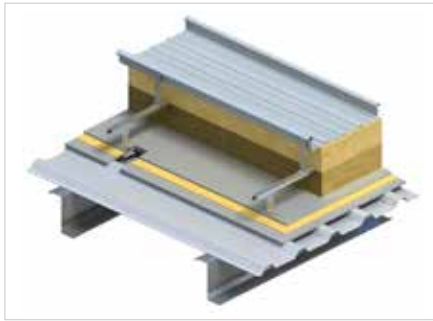
Rain noise reduction

On such projects where rain noise is a consideration, we have a number of cost effective membranes tested, which will assist with the reduction of rain noise. This type of product is pre-bonded to the Standing Seam sheets prior to delivery under factory conditions. Test data is available to support this product, which is commonly used in schools and residential projects where increases of internal sound levels during heavy rainfall can affect the internal environment.

All of the above systems have been tested at Sound Research Laboratories, and project specific advice and test data is available upon request. We can assist with project specification and detailing development where required and in some cases we can undertake testing specifically for your project.

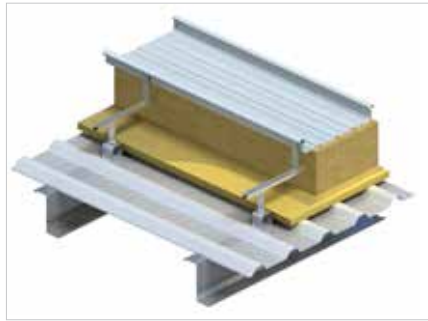
Depending upon specific requirements, we have several systems tested which can provide a high dB SRI rating, or can deal with specific frequency requirements, through incorporation of CP board or high density insulants.

Please contact our technical department to discuss your project.



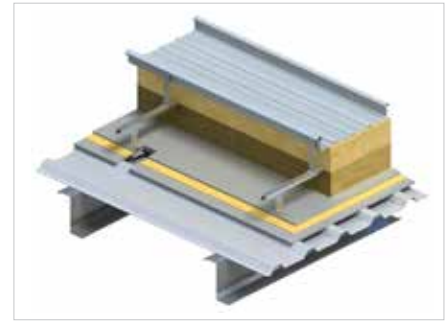
53dB SRI

0.7mm solid steel liner
 Sound pro 10kg/m² membrane
 140mm Rockwool 150kg/m³ acoustic slab
 Sound pro 10kg/m² membrane
 200mm 0.040 lambda quilt
 0.9mm aluminium outer



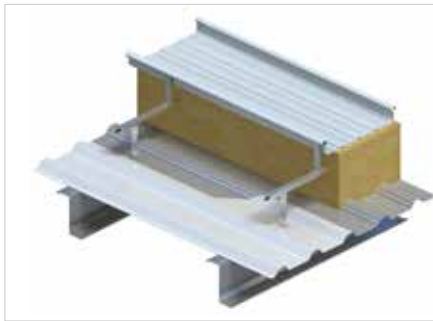
38dB SRI

0.7mm pan perforated steel liner
 30mm 60kg acoustic slab tissue faced
 200mm 0.040 lambda quilt
 0.9mm aluminium outer



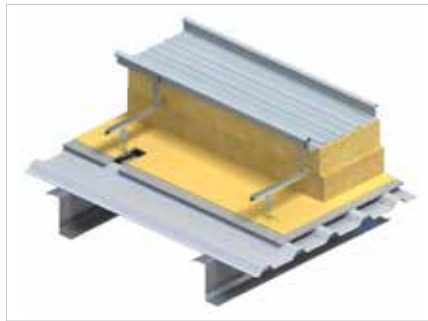
56dB SRI

0.7mm solid steel liner
 18mm CP board
 Sound pro 10kg/m² membrane
 140mm Rockwool 150kg/m³ acoustic slab
 200mm 0.040 lambda quilt
 0.9mm aluminium outer



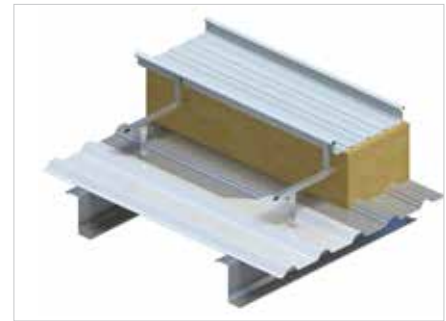
56dB SRI

0.7mm web perforated steel structural deck
 30mm 60kg acoustic slab tissue faced
 Sound pro 5kg/m² membrane
 300mm 0.040 lambda quilt
 0.9mm aluminium outer



54dB SRI

0.7mm solid steel liner
 18mm CP board
 Sound pro 10kg/m² membrane
 140mm Rockwool 150kg/m³ acoustic slab
 200mm 0.040 lambda quilt
 0.9mm aluminium outer



40dB SRI

0.7mm solid steel liner
 200mm 0.040 lambda quilt
 0.9mm aluminium outer

The Ash and Lacy standing seam system can be supplied both pre-curved and naturally flexed over the curvature of a structure on site.

This will depend upon the radius to be achieved with steel and aluminium being able to naturally curve to differing limits.

Whether the sheets are straight or curved, irrespective of radius, the halter spacing remains the same.



Chipping Sodbury Sports Hall

The curving capacities/radii are shown in the following table:

Material	Naturally site curved, convex	Pre-curved convex	Pre-curved concave	Wave form (Site-curved)		Wave form (Pre-curved)	
				Convex	Concave	Convex	Concave
Aluminium	40m (*)	5.0m - Painted 4.2m - Stucco	12m - Painted 11.5m - Stucco	Convex 40m	Concave 60m	Convex 10m	Concave 20m
Painted Steels	60m (*)	12m	25m	By trial only	By trial only	25m	25m

(*) – Ash & Lacy recommend that all siteflexed sheet lengths of less than 10m should be pre-curved. This is because shorter sheet lengths are much stiffer and do not flex as well when curved flexed naturally on site. If metallic paints are to be used then please consult the Ash & Lacy Technical Department, as bend radii may vary. Tighter concave radii can be achieved on pre-curved waveform roofs depending upon application. Refer to technical for further advice. Waveform curves are based on one concave and one convex radius. Multi curves are achievable but may require trials on application.

Note: The above radii for naturally curved sheets are to the top of steelwork. Under no circumstances should aluminium sheets be fitted to a radius of less than 40m without being pre-curved.

For self curved sheets a degree of undulation in the trough of the sheet should be expected.

STANDING SEAM



Stenhousemuir

Sheets should be zipped up consecutively and immediately after installation to prevent site operatives walking on them and promoting damage due to foot traffic. Standing on the sheets will lead to oil canning more so on a curved roof. Sheets should not be laid several at a time and then zipped up afterwards.

Any area where the sheets need to be walked on should be supported by high density non flammable insulation boards (or suitable alternative) and shown on all roof layouts as a

designated walkway area (a non-combustible insulation must always be specified).

Foot traffic on sheets should be kept to a minimum and wherever possible not walked on at all. The sheets can be zipped by placing an operative at the ridge and eaves and setting the machine to automatic therefore removing the need to walk on the sheets. When setting out halters on curved roofs the cover width does not need to be increased.

Vertical Standing Seam

Standing Seam profile can be used to striking effect in a vertical application, with sheets of 20m plus in length being easily installed. In terms of design and detailing there is very little difference between the roof and wall constructions, with similar high performing U/values being easily achieved. Windows, associated jambs, heads and cills can be easily detailed and accommodated and in many cases we have supplied zip up jambs.

A wide range of aesthetics and shapes can be achieved when used in a vertical application, flowing curved eaves details can be achieved. This can be produced as a single sheet with a curve pre rolled into the sheet, or depending upon radius and space on site can be joined through welding of a curve onto the end of the straight element.

Where a hidden gutter detail is required, set back from the eaves, a welded crank can be used. This can be produced under factory conditions for best results. There is also an option for this to be undertaken on site by a welding contractor, but this is done underside conditions and the aesthetic may not be to the same high standard as when produced under factory conditions.



Walsall College, Shepperd Construction

STANDING SEAM



Aesthetics

In addition to our wide range of materials and finishes our Standing Seam profile can be produced as a flat pan option with the main ribs removed.

The benefit of this profile is that it gives the appearance of a traditional flat troughed standing seam profile, with the flat pan configuration being designed to offer the structural benefits of a factory roll formed seam traditionally seen on buildings such as churches or residencies in conservation areas. As the profile goes through its expansion and contraction cycles natural 'oil canning' effect will become present, again as with any traditional standing seam product.

It should be noted that this dishing effect can be present even if the system build up is fully supported. This effect can be reduced by ensuring accurate setting out of halter clips and avoiding foot traffic on the sheets.

For further information please contact Ash and Lacy's Technical or Commercial department.



Saracen House, Glasgow



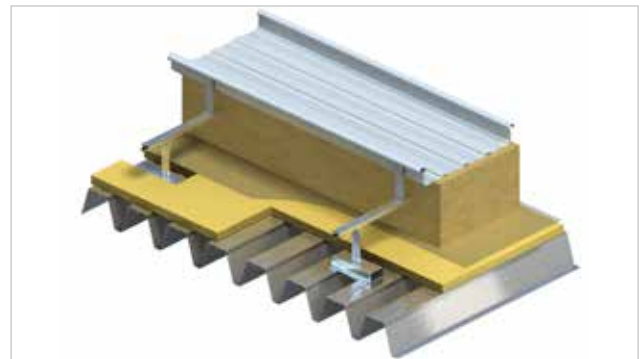
Travelodge, Manchester

Long Span Structural Decks & Trays

Structural Decks & Trays offer the ideal solution for applications where the requirement is to have a roof construction without purlins. Options for spanning in excess of 9m can be provided, leaving the internal soffit with a more aesthetically pleasing finish, and when used with a structural tray can provide a very low profile, almost flat, soffit effect.

Perforated options can be provided for sound absorption purposes, and acoustic test data is readily available.

Our structural deck range can also offer restraint to the structure via diaphragm design. We can offer calculations and a designed solution as part of our specification, following a review of structural steelwork drawings and relevant project loadings. You can discuss your requirements with our technical department.



From top:
 Long Span structural decking profile
 Long Span Web perforated structural decking
 Long Span structural tray

Low/Medium Risk of Moisture Usage

Where there are any difficulties in sealing the laps of the liner profile properly then a proprietary VCL should be used.

The 555JT product is sufficient for most applications, but the specifier can choose from the products in the table below.

Low to Medium Risk Levels of Moisture within the building envelope

Product	Colour	Roll size	Roll Weight	Tensile Strength	Water Vapour Transmission	Water Vapour Resistance
VCL555JT	Clear	2m x 50m	25.2kg	5.9kN/m	0.4gM ² -24hr	555 MN.s.g ⁻¹
		3m x 50m	37.8kg			
		4m x 50m	50.5kg			

General Considerations

Consideration should be given to buildings where there is a possibility for a large number of people to congregate as high levels of moisture can be created from wet or saturated clothes drying out. This risk is greatly increased in poorly ventilated rooms and buildings. The risk is also high in buildings such as swimming pools where high levels of chemicals and vapour will be apparent.

Buildings can have areas within them that have multiple risk zones, such as leisure centres with swimming pools. In such applications both VCL types can be used, with the 46K product being used over the high risk zone. Where roof zones

meet, a termination barrier should be incorporated such as a non – permeable filler block and/or a perimeter clamp, which will allow the zone to be sealed/terminated from the rest of the roof insulation zone.

Care should be taken during the installation of the vapour control layer to ensure that all side laps are sealed correctly. This will reduce the risk of laps being ‘blown’ and possible failure during air leakage tests.

If a perforated liner or decking profile is used then a high capacity reinforced vapour control layer is required in all conditions.

STANDING SEAM

High Risk of Moisture

Where there is a high risk of moisture laden air transferring into the insulation cavity. In such cases a high capacity vapour control layer should be used. The VCL should be 46K to the following specification:-

Water resistance – 46,000MN.s.g-1

Moisture transmission – 0.005gM²-24hr

For acoustic constructions we recommend the use of a high tack tape, cut into small sections and placed above top hat stools. When rolling out the VCL, the tape positioned above the top hat stools will assist with the roll being laid in a uniform flat manner, also we recommend two no. site operatives using a bar through the VCL roll, to ensure the that the product is laid in straight line.

High Level Risk of Moisture within the building envelope

Product	Colour	Roll size	Roll Weight	Tensile Strength	Water Vapour Transmission	Water Vapour Resistance
VCL 46K	Blue/Grey	1.25m x 50m 2m x 25m	22kg 8.0kN/m 17kg	75kN/m	0.005gM ² -24hr	43000 MN.s.g ⁻¹



Vaper Control Layer



High Tack Tape above top hat (blue)

Standard Verge Detail

The leading edge seam is zipped-up and the verge extrusion is then positioned over the seam and holds the sheet into place (the sheet must be zipped up for the verge extrusion to be positioned over the seam).

The verge extrusion is secured in place by the verge clip. The verge clip is then fixed through the side of the halter bracket at every halter location along the verge, which again allows the sheets to expand and contract.

This simplified verge component allows for ease of installation whilst offering superior load resistance. This component can be pre-curved to a 6m radius, in both convex and concave directions removing the need for cutting and notching on site.



Verge arrangement

Ridge/Hip Construction

For a standard ridge construction the ridge filler and shroud are profiled to match the sheet, with the closures being ordered and supplied as the same finish as the roof sheet finish. Please note this on your order so that we can ensure enough material is ordered to cover supply of the ridge closures in a matching finish.

For Hip constructions special hand turn up tools are supplied. These must be requested at the time of ordering the standard tool kit (or whichever tools are required on the project). Special ridge fillers and shroud closures are available upon request and must be ordered at the same time as standard components. We would advise that if special fillers are required longer lead times should be allowed for manufacture.

Note: Hip shrouds are not pressed to match the profile.



Ridge/Hip detail

Zip up rooflights

In-plane zip up rooflights are available to suit the system. Available 400 and 800mm wide, they offer both the aesthetics and practicalities of a GRP rooflight. We recommend that these are used full slope length, from ridge to eaves to prevent the need for joints, which are a potential weak point and are contrary to the principles of standing seam roofs. The seams are clamped in place by an Omega Section and zipped with an oversize set of rolls.

Barrel vault rooflights project above the plane of the Standing Seam, and are not integrated within the plane of the roof. Best practice design codes stipulate that the upstand should be 150mm from the pan of the profile. The roof lights are supported by a 3mm galvanised steel, two piece kerb, at the edge of the rooflight. The kerb is in two pieces to allow a halter to be fixed over its base, to support the sheet which abuts the rooflight upstand. Full CAD details available upon request.

Suntubes

Suntubes are available from a number of manufacturers and can be incorporated by means of welded collar details, to provide flexibility of location within the roof. The soaker offsets the sun tube head from the roof line to provide a mounting point. Internal reflective tubes are fitted to reflect light downwards into the room below.

Barrel vault rooflights

Generally barrel vault roof light can be used within the following applications:-

- Running parallel to the seams, down slope. A welded detail would need to be incorporated to allow drainage behind and around the rooflight.
- Transverse across the roof. Consideration should be given to draining water around rooflights, particularly if there is a long run.
- Along the ridge line
- Curved roof. The tightest radius where barrel rooflights can be incorporated is generally 25m. In certain applications this can be tighter but would need to be considered on a project specific basis.



Suntubes

Solid Halter Brackets

Solid halters are available in three standard heights 85mm, 120mm and 205mm. The height selected will depend on thermal performance requirements and the preferred method of construction. The Halters are directional and the notched side of the halter bracket head always faces the direction of lay. If halter brackets are fixed with the notched side of the halter facing in the wrong direction the sheets will not zip-up properly and the seams will run out of line. Under these circumstances the sheets will not be adequately secured against wind uplift. Splitting of sheets may also occur if halters are set out incorrectly.

For all applications, halters are set out at 400mm centres (300mm for 300mm cover width sheets) whether or not the roof is straight or curved.

GRP Nylon Halter

The 125mm deep GRP Nylon combines innovation with practicality. The halter has pre-positioned diagonal fixing holes and locator tabs to ensure accurate and easy installation. The tabs snugly fit over the Spacer bar to prevent rotation and skating during installation, and pre-positioned holes ensure

that fixings go into the corresponding groove on the Bar.

When used in Single Skin applications the halter clip can be produced without location tabs below. Special advance orders may be required for this. Please speak to our customer services department for more information.

Spacer System Brackets

Brackets are supplied in various heights to suit the depth of construction. Brackets are manufactured from 1.6mm thick galvanized steel to BS EN 10142 and are supplied with a 3mm thick EPDM thermal insulator pad to the base. For fixing brackets into thin gauge steel use BMLS25 fixings. To ensure maximum sheet to bar fastener performance use BMLS25 with S16 washers for walls, S19 washers for roofs and S29 washers for rooflights. See installation guide for further information.

AG40 Bar

Manufactured from 1.25mm thick high yield galvanized steel and supplied in lengths of 1m, 2m & 3m incorporating the Safe-loc™ spigot ends, for easy on-site connection. See installation guide for further information.



STANDING SEAM

Single Skin Verge Clip



In constructions where an 85mm Halter is to be used (generally single skin applications), a special 85mm verge clip must be used. Instead of fixing to the side of the halter bracket the verge clip is fixed to the supporting structure.

Ridge Filler Block



The filler block is used to close off the cavity that is formed under the ridge flashing. It is protected by the shroud/ridge closure as stated above. (Please refer to standard details regarding insulation requirements at the ridge).

Ridge Shroud



The ridge shroud is used to cover the filler block. It provides an aluminium finish and prevents pests attacking the filler block. It is held in place by the ridge retainer. This component can be produced in various colours to match the roof sheet when required.

Drip Angle



The drip angle is riveted to the underside of the pan of the profile with 2 no. rivets per pan. The drip angle is used to restrain the pan of the profile and to reduce damage due to foot traffic. It also provides additional resistance to wind uplift.

Ridge Retainer



The ridge retainer is used to hold the ridge closure flashing/shroud in place. It is fixed at every seam position along the roof.

Eaves Filler Block



The eaves filler is used to close off the cavity formed by the seam of the profile. It is positioned before the sheets are zipped up and held in location by the drip angle.

Liner Profile Filler



Trapezoidal liner profile filler blocks are also available from Ash & Lacy Building Systems. These should be used in conjunction with internal closure flashings. Refer to ridge and eaves details at the end of this guide. Available in both wide and narrow flute shape.

Verge Clip



Fixed over the Verge Extrusion and secured by one fixing per clip into the halter at each halter location. Different sizes are available depending on the height of the halter.

One Piece Verge Extrusion



An extruded section, which is placed over the seam of the profile at gable ends. It is held in place by the Verge Clip, and secures the profile against wind uplift, as well as providing support for the eaves flashing.

Verge Channel



Verge Channel used to clamp the first leading edge seam into position held in place by the verge clip.

Verge Clip fixed over the Verge Channel and secured by one fixing per clip into the halter at each halter location. Different sizes are available depending on the height of the halter.

Ridge Support Zed



An extruded zed section which support the Ridge Flashing.

Verge Tolerance Clip



Hooks under the long leg of the verge channel and provides a bearing face to the verge flashing.

STANDING SEAM



Zippering machine

Powered Zipping Tool to close the Standing Seam over the adjacent sheet and the halter.



Seam crimper

The Manual Seam Crimper is used to close the seam at the start of each run.



Turn-up tool

To introduce a turn-up at ridge conditions.



Turn-down tool

To introduce a turn-down in the pan of the sheet at eaves and valley conditions.



Halter template

The halter spacers used to ensure that halters are correctly positioned.

SISTERS OF MERCY



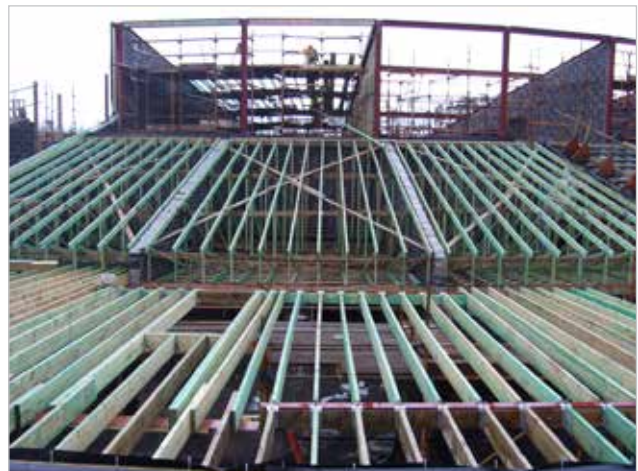
STANDING SEAM

A 35 bedroom retirement home for the Order of the Sisters of Mercy nuns in Castlebar Co. Mayo was constructed using 4,000m² of tapered Standing Seam.

The home, which offers the nuns an independent living space, features tapered sheets in a standard 0.9mm embossed aluminium finish. The specified circular roof added complexity to the project, as every sheet required individual tapering to produce the spectacular “doughnut” shape.

The standing seam roof was constructed above a pre-formed timber truss, quilt insulation was included above a layer of felt to increase the acoustic performance of the roof to reduce the risk of rain noise drumming. Tapered sheets are set out from grid lines, with the halter clips being set to suit, and fixed back to timber purlins. Setting out between grid lines, in typical 6m bays, means that the set out of halters can be adjusted where necessary without progressing too far, before noticing any requirement to adjust set out.

The building was designed by Taylor Architects, Castlebar, and the roofing package was installed by Top-Level Roofing & Cladding Contractors, Charlestown, Co. Mayo .



DERI VIEW SCHOOL, ABERGEVENY



STANDING SEAM

4000m² of Standing Seam was chosen for the roof covering a Deri View Community Primary School due to its flexibility and aesthetic finish. The roof shape involves multiple configurations, including:-

- Pre-curved tight radii
- Site rolled long sheet lengths flexed to a natural curve
- Curved on plan to form a shallow faceted curve, which was site welded at facet points
- Pitched roofs.

Constructed over traditional steel framing, the roof system incorporated a perforated liner to the main hall to reduce sound reverberation. A full set of acoustic test data is available for varying system types from Ash & Lacy's Technical Department.

Where the roof was curved on plan, the standing seam sheets were cut and welded to form the facet. Paint was etched and cleaned away by a specialist welding contractor, and then recoated once welded up. The welding contractor undertakes full warranty for their works.

Materials were finished in a ARS Coating to the standing seam areas, and were complemented by matching PPC (Polyester Powder Coated) finished to the bullnose and fascia perimeters.



KIRKCOLM PRIMARY SCHOOL



STANDING SEAM

Kirkcolm School was refurbished to include a new Ash & Lacy Flat to Pitch and Standing Seam Roof. Our product portfolio was ideal to cater for the failed flat roof, when Dumfries & Galloway Council came to specify the roof framing and covering finish.

The flat to pitch conversion system fixes through into the existing structure through the roof covering, meaning that even though the existing covering may have failed it does not need to be removed and can remain in situ during the fixing of the new framework. A dimension and level survey was undertaken by A&L to establish the levels of the existing roof, to enable our drawing office to produce a full set of working details and calculations for the project engineer to verify the existing structure can take any new loads applied.

A full set of drawings was then produced to enable erection of materials on site.

The Ash & Lacy Standing seam was the chosen material finish to provide a contemporary look to the finished building. Supplied in 0.9mm stucco embossed aluminium to provide a durable and cost effect solution.





ASH & LACY

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